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of demonstrable lacunæ, all lead to the conclusion that the arterial and venous vessels of the squid are connected by capillaries which form a closed vascular system.

The Branchial Nerves of Amblystoma: G. E. Coghill.

1. There is, in larval *Amblystoma,* a complete series of pre-trematic rami of the ninth and tenth nerves. These rami are distributed wholly to the epithelium of the branchial arches and are therefore comparable to the pre-trematic nerves of fishes. Drüner finds the same series of nerves in *Triton* and *Salamandra,* and the first two of the series in *Proteus* and *Menobranchus.*

As in some fishes, there is an anastomosis in *Amblystoma* between the ramus post-trematicus IX. and the first ramus pre-trematicus X. In some individuals there is a similar anastomosis in the second and third branchial arches and in the hyoid arch between the facial and glossopharyngeus. The latter has been found by Drüner in *Triton.*

2. The ramus alveolaris VII. of *Amblystoma* is a pre-spiracular nerve and, as such, cannot be homologous to the ramus mandibularis internus of *Anura.* These two nerves innervate homologous areas and terminate in homologous centers in the brain. They differ, however, in the following important features: (*a*) The ramus alveolaris passes anteriorly of the derivative of the spiracular cleft, while the mandibularis internus passes caudally of that structure; (*b*) the alveolaris passes dorsally of the mylohyoid muscle, while the mandibularis internus passes ventrally of that muscle; (*c*) the alveolaris anastomoses with the trigeminus while the mandibularis does not.

These differences may be explained by reference to *Squalus acanthius,* in which both nerves are present. Here the areas innervated by the two nerves in part coincide and the terminal fibers of the two anastomose. Obliteration of a pre-spiracular nerve of the selachian type in *Anura,* and of a like post-spiracular nerve in *Amblystoma,* would give the two divergent amphibian types of distribution of the facialis.

The Anatomy of the Drumming Organ in some Marine Fishes: A. K. Krause.

The Cell-Lineage of the Mesoblast-Bands and Mesenchyme in Thalassema: John Cutler Torrey. (Read by title only.)

As in many other annelids and mollusks the middle germ-layer has, in *Thalassema,* a double origin. The mesoblast-bands (entomesoblast or cœlomesoblast) arise in the typical manner from D.4, the posterior member of the fourth quartet, which also contributes two small, but not rudimentary, cells to the posterior part of the gut. The 'larval mesenchyme' (ectomesoblast or pædomesoblast) arises, as in most other forms, from cells of the earlier or ectoblastic quartets; but whereas in the forms hitherto described it arises from only one quartet and only in certain quadrants, in *Thalassema* it arises from all of the three quartets and in all of the quadrants (though this latter statement does not apply to all of the quartets). At least twenty primary ectomesoblast cells are formed; but of these only ten are functional, while at least ten are rudimentary and disappear without becoming functional. Of the functional mesenchyme-cells, three are derived from the third quartet and seven from the first. These give rise not only to the larval muscles, but also in part to those of the adult. Of the rudimentary cells, six arise from the first quartet and one from each quadrant of the second quartet. These cells pass into the interior of the entoblast cells, are absorbed, and wholly disappear. They are